

### **Abstract**

A heating appliance control system provides flame and heat control based on a flame signal indicative of a selected flame characteristic. The flame characteristic may correspond to the frequency and amplitude of the flame, or may relate to a mean  
5 flame temperature over time, flame color, size, movement patten, or other physical or aesthetic characteristic of the flame. The heating appliance may also include a scent delivery system and a sound system that function independently or in synchronization with the flame characteristics.